CIA/PB 131632-58 MARCH 20 1959 Approved For Rela UNGLASSIFIED SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION 1 OF 1

FB 131632-58



INFORMATION ON SOVIET BLOC INTERNATIONAL GEOPHYSICAL COOPERATION - 1959

March 20, 1959

U. S. DEPARTMENT OF COMMERCE Office of Technical Services Washington 25. D.C.

Published Weekly Subscription Price \$12.00 for the Series

#### PLEASE NOTE

This report presents unevaluated information on Soviet-Bloc activities in the International Geophysical Cooperation program from foreign-language publications as indicated in parentheses. It is published as an aid to United States Government research.

# "INTERNATIONAL GEOPHYSICAL COOPERATION" PROGRAM -- SOVIET-BLOC ACTIVITIES

#### Table of Contents

		Page
ı.	Rockets and Artificial Earth Satellites	1
II.	Upper Atmosphere	14
III.	Meteorology	8
IV.	Gravimetry	9
٧.	Oceanography	10
VI.	Arctic and Antarctic	11

#### I. ROCKETS AND ARTIFICIAL EARTH SATELLITES

## Sputnik III Power Sources Still Functioning

Sputnik III completed its 4,000th revolution of the Earth at 1232 (Moscow time) on 27 February 1959, 289 days after its launching.

The radio transmitter "Mayak" is still operating. Its principal power sources are solar batteries. The chemical power source carried by the satellite is also operating, ensuring power for the transmitter in those parts of the orbit where the satellite is in the Earth's shadow.

This continuous and steady operation of the radio transmitter in all parts of the orbit makes it possible to prolong and expand the study of the ionosphere and the conditions of radio wave propagation.

Observations of Sputnik III are conducted, as earlier, by radio tracking stations and by optical means. Photographing is conducted regularly.

Sputnik has, from the moment of its launching, traveled a distance of more than 183 million kilometers. Its orbital period has decreased during this time from 105.95 to 100.80 minutes, and its apogee has decreased by 485 kilometers, amounting to only 1,395 kilometers at present. ("Four Thousand Revolutions Around the Earth;" Moscow, Izvestiya, 28 Feb 59, p 4)

## Television Broadcasting From Artificial Earth Satellites

A full translation of an article describing a report by Prof S. I. Katayev on television broadcasting from artificial Earth satellites, which was presented at a meeting of the Technical Council of the Ministry of Communications, follows.

"At the meeting of the Technical Council of the Ministry of Communications USSR, a report by Prof S. I. Katayev was heard on the subject of the feasibility of solving certain problems of television broadcasting in conjunction with the launching of the artificial Earth satellites.

**CPYRGHT** 

"S. I. Katayev indicated that the solution of the problem of covering a large territory by television broadcasting encounters great difficulties due to the fact that reliable propagation of VIF (very high frequency) waves can be obtained only in the line of direct visibility. This brings up the problem of lifting the relay stations to a great height.

"The solution of this problem can be visualized with the aid of launching an artificial Earth satellite which will revolve in a circular equatorial orbit at an altitude of about 36,000 kilometers.

"The launching of artificial Earth sate Lites, especially the third Soviet satellite, carrying an active transmitting radio station, as well as the achievements in the allied fields of science and rocket technology, and the preliminary calculations and evaluation of individual assumptions lead to the conclusion that the launching of a satellite with the desired orbital parameters needed to accomplish teldvision broadcasting over large territories is quite feasible.

"S. I. Katayev pointed out that in the solution of a number of problems for the subsequent development of television technology, including the selection of the standards, it is necessary, even now, to take into account the possibility of utilizing the artificial Earth satellite. It is also necessary to start to develop a series of concrete answers to problems, such as the transmitting and receiving radio equipment designed for several years' operation without servicing; the selection of an optimum wave length for the cosmic retransmitter; automatic scanning of large antennas in cosmic space; sufficiently powerful, independent, long-duration power sources; investigation of the economic variants of color television designed to utilize the cosmic retransmitters; etc.

"The speaker proposed to include the basic measures for realization of a cosmic television program retransmitter in the Seven-Year Plan for the development of the economy of the USSR." ("At the Technical Council of the Ministry of Communications"; Moscow, Radiotekinika, No 1, Jan 59, p 67)

## Artificial Earth Satellites and Terrestrial Magnetism

The readings of Sputnik III's magnetometer made it possible to establish that the influence of the east Siberian magnetic anomaly fades very slowly with altitude. This means, says Prof A. G. Kalashnikov, vice-president of the International Association of Terrestrial Magnetism and Aeronomy, that this anomaly is probably not connected with the large accumulation of ferromagnetic masses in the Earth's crust and that its source is located much lower, possibly on the surface of the molten core of the Earth.

This was brought out in a survey of geomagnetic investigations centered particularly in those conducted with artificial earth satellites.

Future studies of the Earth's magnetic field with the aid of satellites and rockets will make it possible to reveal more thoroughly the true picture of the distribution of the lines of force of the geomagnetic field. This will also make it possible to produce forecasts concerning the effect of solar activity on the Earth's atmosphere and to give an explanation of magnetic storms, the development of aurorae, and a whole series of other geophysical phenomena. ("Artificial Earth Satellites and Terrestrial Magnetism," by Prof A. G. Kalashnikov, Doctor of Physicomathematical Sciences, vice-president of the International Association of Terrestrial Magnetism and Aeronomy; Moscow, Nauka i Zhizn', No 1, Jan 59, pp 17-21)

### Electron Concentration in Ionosphere Measured With High-Altitude Rockets

Measurements of the distribution of electron concentration on the ionosphere are described. The measurements were made with high-altitude geophysical rockets during the years 1954-1958. One of these rockets, fired on 21 February 1958, reached an altitude of 473 kilometers. Electron concentration was determined on the basis of the dispersion of radio waves emitted from the rocket. A description of the technique, involving use of a dispersion interferometer, is given. Data obtained on the ascent only was used. The results obtained from several different firings are represented in graphs and compared.

It is noted that a further increase in the height of the measurements will be necessary to determine the upper boundary of the ionosphere, where electron concentration is equal to that in interplanetary space. ("Rocket Measurements of Electron Concentration in the Ionosphere With Ultrashort-Wave Dispersion Interferometer," by K. I. Gringauz; Moscow, Doklady Akademii Nauk SSSR, Vol 120, No 6, 21 Jun 58, pp 1234-1237)

## Prof Dobrotin Surveys Cosmic Ray Studies With Satellites

A survey of cosmic ray investigations using artificial earth satellites appears in the January issue of <u>Priroda</u>. The article, written by Prof N. A. Dobrotin, Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR (Moscow), discusses both Soviet and US experiments.

In his remarks, Dobrotin, mentions the use of Cherenkov counters as the most promising method of separating multicharged nuclei in the primary flow of cosmic radiation. A charged particle passing through matter with a velocity exceeding the speed of light in the specified medium causes flashes of visible and ultraviolet radiation in the plate, the intensity of which, other conditions being equal, is proportional to the square of the charged particles. The magnitude of the flash can be measured with the aid of a photoelectronic multiplier connected in the corresponding radio circuit. This experiment has not been made at present; however, there is every reason to consider that it will be accomplished in one of the next artificial Earth satellites. The Cherenkov counter can also be used for studying the heavier muticharged particles in the composition of primary radiation, as was done in Sputnik III. ("Investigations of Cosmic Rays With the Aid of Artificial Farth Satellites," by Prof N. A. Dobrotin, Physics Institute imeni P. N. Lebedov, Academy of Sciences USSR; Moscow, Priroda, No 1, Jan 59, pp 57-64)

### Photograph of Soviet Tracking Camera "Kometa"

CPYRGHT A photograph showing two men preparing the instrument "Kometa" for operation bears the following caption:

"The combination photographic apparatus "Kometa" is being mastered in the Artificial Earth Satellite Observation Station affiliated with the Fareast State University, Vladivostok. The "Kometa" is combined with a 6-inch refractor telescope and can automatically follow any celestial object selected. (Moscow, Izvestiya, 25 Feb 59, p 6)

**CPYRGHT** 

## "Mechta" Particle Counters Used Ammonium Phosphate Crystals

E. P. Mustel', Corresponding Member of the Academy of Sciences USSR, discussing measurements conducted by the Soviet cosmic rocket "Mechta," reveals the use of two ballistic piezoelectric transducers of ammonium phosphate for recording the impacts of micrometeoric particles. ("The New Planet of the Solar System," by E. P. Mustel'; Moscow, Nauka i Zhizn', No 2, Feb 59, pp 2-6)

#### II. UPPER ATMOSPHERE

## Sector of Astrobotany Studies Martian Plant Life

Situated on the outskirts of Alma-Ata, the Sector of Astrobotany, Academy of Sciences Kazakh SSR, headed by Gavriil Adrianovich Tikhov, Corresponding Member of the Academy of Sciences USSR, is engaged in the study of life on Mars and other planets.

- 4 -

Tikhov succeeded in making thousands of photographs of Mars in 1909 and discovered the similarity of the optical properties of the Martian atmosphere with that of the Earth. From these and other investigations of the planet arose the outline of another science, astrobotany.

Tikhov established that a Martian plant, living in a more severe climate, absorbs solar rays differently than an earth plant. Therefore, its color is also changed, becoming gray and blue. The cold climate also explains the fact that Martian plants, in contrast to Earth plants, absorb thermal (infrared) rays.

These conclusions were confirmed by Tikhov on Earth subjects. Plants photographed under infrared rays in the sub-Arctic and in high mountain areas appeared dark. The main absorption band of the green matter (chlorophyll) of the leaves is not markedly observable, and many plants have a bluish, and sometimes a deep blue, color.

Z. 3. Parshina, a scientific associate of Tikhov, resolved to study spectral properties of plants in relation to their historic development. She proved that the optical properties of a plant change in relation to the amount of solar energy it absorbs.

In the humid and warm geological periods, when the sky was covered by heavy clouds, plants absorbed the red rays which penetrated the dense atmosphere. A brightly expressed absorption band of chlorophyll was observed in the spectrum of similar plants. In the course of time, the air became more transparent. Plants adapted themselves to a fuller use of solar energy. The absorption band of chlorophyll in them was less clearly expressed. This led to confirmation of the conclusion that the more severe the living conditions for a plant, the less marked is the chlorophyll absorption band.

Still another interesting observation is made. The question is raised whether wild or cultivated plants exist on Mars. Another associate of Tikhov's, A. D. Semenenko, is now pursuing the study of the light evolution of a wild plant and the change of its optical characteristics when it is cultivated. This investigation may perhaps tell us which earth plants, and which of their hybrids, can be successfully transferred to Mars in time. ("As Guests of the Eldest Astronomer," by Viktor Pekelis; Moscow, Znaniye-Zila, No 2, Feb 59, pp 24-25)

#### First Results of New Refractor at Pulkovo Discussed

The first results of observations on the large 26-inch refractor telescope were discussed in the scientific council of the Main Astronomical Observatory, Pulkovo. The refractor, a unique instrument, was installed at Pulkovo 1 1/2 years ago. During this time, astronomers have obtained 250 rlates with the photographic images of binary and multiple stars, star masses, of Mars, and other celestial objects. Interesting data was obtained as a result of measuring the shape of the Moon.

A thorough analysis of the pictures made with the aid of the large refractor is now being conducted in the laboratories of the Pulkovo Observatory. The manufacture of a special adapter for photographing binary stars has begun. It is proposed to use a photoelectric device for the automation of astronomic observations. ("Two hundred and fifty Pictures of Stars, the Moon, and Mars"; Moscow, Pravda, 28 Feb 59, p 4)

#### Byurakan Observatory Has Largest Soviet Radiotelescope

Construction of the Byurakan Observatory, Armenian SSR, was begun 12 years ago. But even in this short period, the observatory, under the leadership of Academician V. A. Ambartsumyan, has conducted outstanding investigations and made scientific discoveries which have attracted international attention. The discovery of star clusters (the foci of the formation of stars in the galaxy) and the advancement of the hypothesis of the process of their formation, the statistical study of stars and interstellar matter, the investigation of the spectra of stars and nebulae, and a series of other problems, all this was a valuable contribution to world astronomical science.

The problems of astrophysics occupy a major spot in the work of the observatory. Simultaneously with observations of the sources of cosmic radio emission, the scientific associates of Byurakan conduct scientific research on the design and construction of radiotelescopes. A special astronomical base observatory located 200 meters above Byurakan has now been built. Here, at an altitude of 1,700 meters above sea level, the largest interference telescope in the USSR has been erected. With it, it will be possible to study the radio emission of heavenly bodies and distant star systems. The total area of the reflector, which is made in the form of parabolic cylinders, consists of about 4,500 square meters. For achieving the high resolving power of the telescope along both coordinates, the separate elements of each reflector are arranged in the form of a cross. The design of the new radiotelescope was developed by Armenian scientistastrophysicists under the supervision of G. Minasyan, Candidate of Technical Sciences. ("At an Altitude of 1,700 Meters," I. Maksimov; Moscow, Nauka i Zhizn, No 1, Jan 59, p 66)

## Observations of Mars During Opposition of 1956

An article in the periodical Nauka i Zhizn', by F. A. Tsitsin, scientific associate of the State Astronomic Institute imeni Shternberg, describing some results of observations of Mars during its last opposition, appears in answer to readers' questions.

According to observers, Mars' atmosphere was much less transparent than usual in its 1956 approach to the Earth. A dense haze prevented the details of its surface from being seen. The contrast of the seas (apparently regions of plant cover) and the continents was therefore not great. The boundaries of the seas were also indistinct and the numerous canals, usually visible, were for the most part unobserved. Bright white spots and bands on the surface were noticed several times. These could have been either snew, frost or fogs. An interesting phenomenon was observed in the first part of September. In 2 weeks, the south polar cap disappeared. Apparently it was covered by a mist forming in Mars' atmosphere as a result of a dust storm. Investigations by N. P. Barabashev, Soviet astronomer, showed that the atmospheric part of the cap, consisting of light clouds, transparent to infrared rays, was scattered by this same storm. N. N. Sytinskiy, astronomer, showed that the coloration of the dust particles was the same as the color of the continents. Thus, it is possible to assume that this was actually dust raised from the surface of the continents, the desert, which occupies five sixth of its surface, by the winds. Observations confirmed the fact that the polar caps, visibly of a reddish color, were not uniform or translucent, a circumstance noted earlier by N. P. Barabashev.

The turbulence of Mars' atmosphere during opposition was also indicated by rapidly shifting yellowish dust clouds, several thousand kilometers in size. From time to time, the dust cloud even cleared, and it was nnly at such times that visibility of Mars improved.

It was natural that the last opposition was met with a new, more perfected observational technique, the use of which gave Soviet and other scientists the possibility of conducting thousands of different observations: photographic, photoelectric, radiometric, electrono-optical, radio astronomical, etc. Photographs were made in different colors of the spectrum with the aid of light filters, and the use of an electrono-optical converter made it possible to film the planet in infrared light.

Many problems in the study of Mars excite astronomers. Among these are the observed coloration of the planet, the presence of oxygen in its atmosphere, life on the planet, and many, many others.

Now, more than ever, says Tsitsin, it is clear that with the aid of instruments fixed in rockets and satellites, they will be quickly investigated, and after this, Mars will no longer be a riddle. ("Observations of Mars," by F. A. Tsitsin; Moscow, Nauka i Zhizn', No 2, Feb 59, pp 77-78)

#### Brightness and Polarization of Daylight Measured in Libyan Desert

Observations on the brightness and polarization of the clear day sky were made during October-November 1957 by the author in the Libyan Desert, 200 kilometers south of Aswan. A visual photometer equipped with yellow filter and polaroid lens was used. Degree of polarization, the orientation of the plane of oscillation, and the components of the scattering index were determined from the data. The total scattering index was divided into two components, one due to molecular scattering and the other due to aerosol scattering. ("On the Scattering and Polarization of Light in the Atmosphere Undar Conditions of the Libyan Desert," by Ye. V. Pyaskovakaya-Fesenkova; Moscow, Doklady Akademii Nauk SSSR, Vol 123, No 6, 21 Dec 58, pp 1,006-1,009)

#### III. METEOROLOGY

#### Meteorological Observatory on Tomnicky Stit To Be Enlarged by Czechs

An article which discusses the results of weather data compiled during the last 15 years at the Czechoslovak weather station (49 12 N, 20 13 E) on Lomnicky Stit (Lomnitz Peak) in the High Tatra gives the following additional information: The Slovak Academy of Sciences is now building a special research station of the Lomnicky Stit, primarily for the measurement of cosmic radiation; the scientific program of the new station will be expanded through the cooperation of the meteorological facilities, and the meteorological observations on Lomnicky Stit will be utilized even more than in the past. ("Evaluation of 15 Years of Observations On Lomnitz Peak," by S Petrovic, Hydrometeorological Institute, Bratislava; Prague, Studia Geophysica et Geodaetica, Vol 1, No 3, 1959, pp 62-81)

#### IV. GRAVIMETRY

# Bulanzhe Discusses Gravimeter Studies Conducted in Aerogravimetric Laboratory, Academy of Sciences USSR

At the Aerogravimetry Laboratory of the Institute of the Physics of the Earth, Academy of Sciences USSR, the co-oscillation of the stand of gravimeters, types Noergaard, SN-3, and GAE-3, was investigated. The basis for the determinations of the co-oscillations of the stand was the varying stability of the stand with different inclination angles of the quartz system. The measurements were made on a concrete pillar, on snow, asphalt, turf, sand, swampy ground, and under other conditions. The angular displacement of the gravimeter envelope caused by the co-oscillation of the stand was determined with a special level which had a sensitivity of about 2 seconds for 2 millimeters of arc length.

It was found that with all three types of quartz gravimeter with horizontal torsion thread, a co-oscillation of the stand reduces the measured angle of inclination of the quartz system.

The largest value for the co-oscillation was found in the case of the SN-3 gravimeter. In measurements on less stable foundations, the co-oscillation falsified the measured  $\Delta$  g by a systematic error of 5 milligals and more.

The co-oscillation of the stand of the Noergaard gravimeter was found to be only one half to one third that of the SN-3.

In the case of the GAE-3 gravimeter, the co-oscillation of the stand had practically no influence on the measurement accuracy.

To minimize the co-oscillation of the stand, it is necessary to conduct the measurements under conditions of maximum stability of the stand and to set the gravimeter to the smallest measurement range.

To increase the stability, it is necessary to set the stand on metal spikes which have been driven into the ground (conditions permitting); when the instrument is set up on snow, asphalt, or sand, foundation plates of baked clay should be used.

If the influence of the co-oscillation is to be eliminated entirely, the angle of deviation of the quartz system must be measured with a special sensitive level at the same time as the measurement of the  $g_r$  is being made, and the measured  $g_r$  value corrected by the value for  $\Delta g_r^a$ , as determined through the formula

$$\Delta g_{\mathbf{r}}^{\mathbf{a}} = q \Delta \alpha$$
",

where 
$$q = \frac{1}{e''} \sqrt{2g_r g_o}$$
  $(1 + \frac{5}{4} - \frac{g_r}{g_o})$  and

e" = the radiant in seconds. ("Co-oscillation of the Stand in the Case of Quartz Gravimeters with Horizontal Torsion Threads," by J. D. Bularzhe; Prague, Studia Geophysica et Geodaetica, Vol 1, No 3, 1959, pp 25-32)

## Method for Determining the Reaction Factor in Galitzin Type Seismometers

A method of determining the reaction factor ( o'), i.e., the effect of the galvanometer movement on the seismometer movement in the case of the Galitzin type seismometer is described as follows:

First, a so-called resistance-T section is connected between seismometer and galvanometer. This reduces the transmission factor to the nth part; the dampings of the seismometer and galvanometer, however, are maintained. It may then be shown that the reaction factor is likewise reduced to the nth part under these conditions. If n is chosen greater than 10, then, since in all cases  $\sigma < 0.1$ ,  $\sigma < 0.1$  for the arrangement with such a resistance-T section. The ratio of the first two extremes of the galvanometer deflection must therefore be about 2.3, if the tuning conditions for the Galitzin instrument are fulfilled. If this is the case, then the ratio of the first two extremes is determined again, without the resistance-T section. The reaction factor can be plotted in graphic form for direct reading. ("A Method for the Determination of the Reaction Factor in Seismometers of the Galitzin Type," by Ch. Teupser, Institute for Soil Dynamics and Seismology, Jena; Prague, Studia Geophysica et Geodaetica, Vol 1, No 3, 1959, pp 92-93)

#### V. OCEANOGRAPHY

## Soviet Ship "Vityazi" Measures Plankton Distribution in Western Pacific

Measurements of plankton distribution (in milligrams per cubic centimeter) in the O-100 meter level of the Western Pacific were made during July-October 1957 by the expedition ship Vityaz' of the Institute of Oceanology, Academy of Sciences USSR. The results of the measurements

and an interpretation of the results are given. ("Quantitative Distribution of Plankton in the Tropical Waters of the Western Part of the Pacific Ocean," by L. A. Ponomareva and Ye. A. Lubny-Gertsyk, Institute of Oceanology, Academy of Sciences USSR; Moscow, Doklady Akademii Nauk SSSR, Vol 120, No 6, 21 Jun 58, pp 1,246-1,248)

#### VI. ARCTIC AND ANTARCTIC

## Medical Report on Condition of Drift Station Workers

B. Korolev was the physician assigned to the drift station Severnyy Polyus-7 in April 1957. All the 20 members of the station staff were exceptionally strong and healthy men. Before being included in the station staff, they had to pass a thorough physical examination before a medical commission. All of them, except two who were over 50, were excellent sportsmen, and some of them had worked in the north before.

The intense work and strain to which the men were subjected during the period of the drift gradually began to show effects. There were signs of exhaustion. The monotonous daily life and lack of movement first affected the older men and those who had less physical work to do.

The men were under constant medical supervision. Gradually the number of illnesses increased. Urgent measures had to be taken, since the polar night was approaching (i.e., in October 1957). Various remedies and methods of treatment were tried, but quite a number of the staff members continued to suffer from various ailments.

With the beginning of the polar night, the situation, which was already serious enough, was further aggravated. Some of the expedition members suffered from lack of appetite, insomnia; others were extremely sleepy, and their working ability and memory were impaired.

The first symptoms of A, B and C avitaminosis appeared, i.e., falling out of hair, thickening of the fingernails and skin, bleeding of gums, etc. This happened in spite of the fact that the food was good, it contained an adequate amount of fresh fruit and vegetables. Apparently the severe frost, the constant wind, the lack of sun, and the water obtained from melted snow, -- all this had a bad effect.

The physician assigned to this station had some doubt as to what should be done under these circumstances. He even thought of the remote possibility that the drift might have to be discontinued.

Dr Korolev had formerly observed that the sportsmen and those who went in for regular physical exercise were less subject to the effects of the polar night; even if they did suffer, it was in a much lighter form. The following two medical cases demonstrated the great value of physical exercises as a preventive remedy.

Polar scientist R., 28 years old, began to feel droopy and sleepy, and had strong palpitation. The doctor diagnosed a progressive, functional insufficiency of the cardiovascular system. His pulse, in a state of repose, was 70; his blood pressure was 125/75. Some other tests gave poor results, too, such as the Kushelevskiy-Martine test (this test consists of counting the pulse twice, for 10 seconds each time, i.e., before performing a series of 20 squats during a 30-second period, and after such an exercise, also for 10 seconds, before the pulse has returned to the diginal count obtained before the test. The blood pressure is also taken before the test and after it, when the pulse is normal); taking the pulse before and after exercising; electrocardiogram; and other tests. There was some question whether R. would be able to remain at the drift station.

The condition of V. was no less serious. This young man began to suffer from loss of appetite, insomnia, persistent constipation, and intestinal bloating; his working ability was reduced, and he was often moody, irritated, and quarrelsome. Medicinal treatment gave only temporary relief. There was some talk of taking him off the station.

At this point, the doctor decided to introduce physical culture. The patients were instructed to take walks on skis, to perform gymnastics and other exercises, and they were used more frequently to perform various kinds of work involving movement and carrying of loads.

On the fifth day, R.'s health had improved considerably. His blood pressure was 145/85, and his pulse was more stable. After a month of this kind of treatment, R.'s condition had improved even more: his pulse did not fluctuate so much and returned to normal after 2.5 minutes, and his blood pressure dropped slowly. After another month, the blood pressure had gone down to 120/80, and his working ability was fully restored.

V. received similar treatment. He was instructed to perform special exercises using his stomach muscles and to walk on skis for an hour a day. After 2 weeks, the patient had regained his appetite, his sleep improved, and his digestion was activated. Meanwhile, the physical exercises continued, while his working ability and his morale improved steadily. Very soon, he was completely recovered and could continue to work at the drift station.

Having convinced himself that physical exercise had such a good effect under these conditions, the doctor recommended it to all the other expedition members. ("A Year of Floating on the Arctic Ccean"; Moscow, Fizkul'tura i Sport, No 1, Jan 59, pp 10-11)

#### Activities in Antarctic

The current summer in Antarctica is unusual. It is much colder, compared with previous years. The snow barely melted in the area of Mirnyy. The roofs of most of the buildings are on a level with the general snow cover. The shore ice between the Pravda Coast and the Haswell Islands has been preserved.

Members of the Fourth Complex Antarctic Expedition began their scientific research and other necessary activities within a short time after arrival. At the interior stations Vostok and Komsomol'skaya, research is conducted according to plan. The station Komsomol'skaya has been converted from a permanently operating station into a temporary, auxiliary base. Two polar workers are stationed there at this time. M. Lyubarets is in charge of this station. He spent many winters in the Arctic and took part in the drift of one of the Severnyy Polyus stations. He also spent over a year in Antarctica with the Second Antarctic Expedition. The staff at Komsomol'skaya conducts regular weather observations, and transmits data to the pilots of planes flying from Mirnyy into the interior.

The aerial detachment, headed by the well-known polar pilot B. Osipov, has begun a busy season. Planes fly daily to Vostok and Komsomol'skaya to supply the stations with everything needed in their work. The pilots sometimes have to be in the air up to 14 hours at a temperature below minus 40 degrees Centigrade.

The cold weather, which set in suddenly in the central regions of Antarctica, has made plane landings difficult. Therefore extensive glaciological research in the interior has been postponed until the spring season. -- B. Savel'yev, chief of glaciological detachment. ("The Busy Season"; Moscow, Vodnyy Transport, 10 Feb 59)

## Report from Severnyy Polyus-7

Ten months [sic; should be 1 year and 10 months] have passed since Severnyy Polyus-7 began its drift. During this period, the station staff has done a great amount of work, especially under the IGY program. In some fields of science, research has been conducted above the plan. Valuable material has been collected on hydrology, marine geology, meteorology, actinometry aerology, the ionosphere, and terrestrial magnetism.

The drift station is now in a part of the Central Arctic Ocean where no extensive oceanographic research has been conducted before. The results of work in marine geology are extremely valuable. The scientists studied the western slope of the Central Arctic elevation and the eastern slope of the submarine range imeni M. Lomonosov, as well as the peak of this mountain range.

The core samples of bottom sediments, which are up to 35 centimeters long, made it possible to determine the structure of sediments, to estimate the rate of sedimentation, and to give an approximation of their absolute age. This enabled the scientists to outline the principal stages in the geological history of the Arctic Ocean.

Preliminary data obtained by the geophysicists indicate that in the area of the Lomonosov range, there is apparently a magnetic anomaly with the vertical component of the Earth's magnetic field. The almost complete absence of auroras in the area of the drift seems somewhat unusual. Apparently, the station is now located in a zone of minimum occurrences of auroras. ("On the Drifting Ice Floe"; Moscow, Vodnyy Transport, 6 Feb 59)

\* \* \*